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IS/ISO 603-1 : 1999
[Superseding IS 2324 (Part 2) : 1985]

भारतीय मानक

आबद्ध अपघर्षी उत्पाद — आयाम

भाग 1 केन्द्रों के बीच बाह्य बेलनाकार अपघर्षण के लिए सान पहिया

Indian Standard

BONDED ABRASIVE PRODUCTS — DIMENSIONS

PART 1 GRINDING WHEELS FOR EXTERNAL CYLINDRICAL GRINDING BETWEEN CENTRES

ICS 25.100.70

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

January 2013 **Price Group 7**

Abrasives Sectional Committee, PGD 09

NATIONAL FOREWORD

This Indian Standard (Part 1) which is identical with ISO 603-1 : 1999 'Bonded abrasive products — Dimensions — Part 1: Grinding wheels for external cylindrical grinding between centres' issued by the International Organization for Standardization (ISO) was adopted by the Bureau of Indian Standards on the recommendation of the Abrasives Sectional Committee and approval of the Production and General Engineering Division Council.

This standard was originally published as IS 2324 (Part 2) : 1963 'Bonded abrasive grinding wheels: Part 2 Dimensions' and revised in 1971 and further revised in 1985 in two parts. The committee has now decided to adopt this standard in a single number as IS/ISO 603-1 : 1999 and IS/ISO 603-2 : 1999 by superseding IS 2324 (Part 2) : 1985.

After the publication of this standard, IS 2324 (Part 2) : 1985 'Bonded Abrasive Grinding wheels: Part 2 Dimensions' shall be treated as withdrawn.

The text of ISO Standard has been approved as suitable for publication as an Indian Standard without deviations. Certain terminology and conventions are, however, not identical to those used in Indian Standards. Attention is particularly drawn to the following:

a) Wherever the words 'International Standard'appear referring to this standard, they should be read as 'Indian Standard'.
b) Comma (,) has been used as a decimal marker while in Indian Standards, the current practice is to use a point (.) as the decimal marker.

In this adopted standard, reference appears to certain International Standards for which Indian Standards also exist. The corresponding Indian Standards, which are to be substituted in their respective places, are listed below along with their degree of equivalence for the editions indicated:

International Standard	*Corresponding Indian Standard*	*Degree of Equivalence*
ISO 525 : 1999 Bonded abrasive products — General requirements.	IS 551 : 2012 Bonded abrasive products — General requirements (*third revision*)	Technically Equivalent
ISO 6103 : 1986 Bonded abrasive products — Static balancing of grinding wheels — Testing	IS 13068 : 1991[1] Bonded abrasive products — Static balancing of grinding wheels — Testing	Identical
ISO 13942 : 2000 Bonded abrasive products — Limit deviations and run-out tolerances	IS/ISO 13942 : 2000 Bonded abrasive products — Limit deviations and run-out tolerances	do

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

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1) To be withdrawn since ISO 6103 : 1999 had been adopted as IS 15297 : 2003.

Indian Standard

BONDED ABRASIVE PRODUCTS — DIMENSIONS

PART 1 GRINDING WHEELS FOR EXTERNAL CYLINDRICAL GRINDING BETWEEN CENTRES

1 Scope

This part of ISO 603 specifies the nominal dimensions, in millimeters, of:

- Type 1: Straight grinding wheel
- Type 5: Wheel recessed on one side
- Type 7: Wheel recessed on both sides
- Type 20: Wheel relieved on one side
- Type 21: Wheel relieved on both sides
- Type 22: Wheel relieved on one side and recessed on the other side
- Type 23: Wheel relieved and recessed on one side
- Type 24: Wheel relieved and recessed on one side and recessed on the other side
- Type 25: Wheel relieved and recessed on one side and relieved on the other side
- Type 26: Wheel relieved and recessed on both sides.
- Type 38: Hubbed wheel
- Type 39: Double hubbed wheel

These bonded abrasive products are intended to be used for external cylindrical grinding between centres. The workpiece and the grinding wheel are mechanically guided.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of ISO 603. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO 603 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the lates edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 525:1999, *Bonded abrasive products — General requirements*.

ISO 6103:1999, *Bonded abrasive products — Static balancing of grinding wheels — Testing*.

ISO 13942:—[1], *Bonded abrasive products — Limit deviations and run-out tolerances*.

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[1] To be published.

3 Dimensions

3.1 Type 1: Straight grinding wheel

See Figure 1 and Table 1.

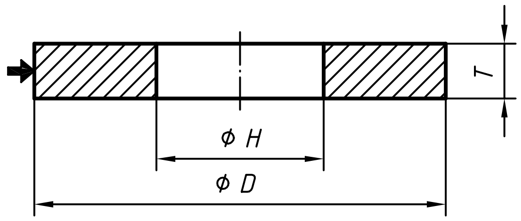


Figure 1 — Type 1

Table 1 — Dimensions of Type 1

D	*T*										*H*
	20	25	32	40	50	63	80	100	125	150	
250	X	X	X	X	—	—	—	—	—	—	76,2
											127
300	X	X	X	X	X	—	—	—	—	—	76,2
											127
350/356	—	X	X	X	X	X	—	—	—	—	127
400/406	—	—	X	X	X	X	X	—	—	—	
450/457	—	—	X	X	X	X	X	—	—	—	127
											203,2
500/508	—	—	X	X	X	X	X	—	—	—	203,2
											304,8
600/610	X[a]	X[a]	X[a]	X	X	X	X	X	—	—	203,2
											304,8
750/762	X[a]	X[a]	X[a]	X[a]	X	X	X	X	X	—	304,8
800/813	X[a]	X[a]	X[a]	X[a]	X	X	X	X	X	—	
900/914	X[a]	X[a]	X[a]	X[a]	—	X	X	X	X	X	304,8
											406,4
1 060/1 067	X[a]	X[a]	X[a]	X[a]	X[a]	X	X	X	X	X	304,8
											406,4
1 250	—	—	—	—	—	X	X	X	X	X	508

[a] Mainly for camshaft or crankshaft grinding.

3.2 Type 5: Wheel recessed on one side

See Figure 2 and Table 2.

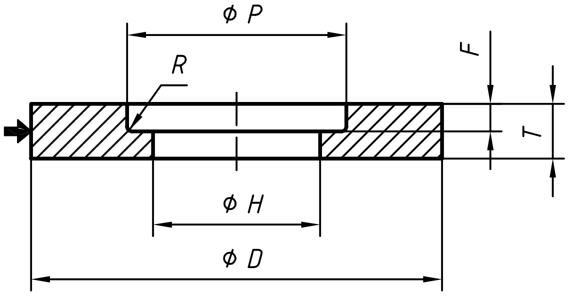


Figure 2 — Type 5

Table 2 — Dimensions of Type 5

D	T	H	P	F	R_{max}
300	40	76,2	150	13	3,2
	50				
300	40	127	190		5
	50				
350/356	40	127	215	13	
	50				
400/406	40			13	
	50				
450/457	63				
	80			25	
450/457	40	203,2	280	13	
	50				
	63				
	80			25	
500/508	40	203,2	400	13	8
	50				
	63				
	80			25	
500/508	40	304,8	400	13	
	50				
	63				
	80			25	
600/610	63	203,2	400	13	
	80			25	
	100			50	
600/610	63	304,8	400	13	
	80			25	
	100			50	
750/762	63	304,8	400	13	
	80			25	
	100			50	
800/813	63	304,8	450	13	
	80			25	
	100			50	
900/914	63	304,8	450	13	
	80			25	
	100			50	
1 060/1 067	63	304,8	455	13	
	80			25	
	100			50	
	125			60	
	150			70	
1 060/1 067	63	508	720	13	
	80			25	
	100			50	
	125			60	
	150			70	

3.3 Type 7: Wheel recessed on both sides

See Figure 3 and Table 3.

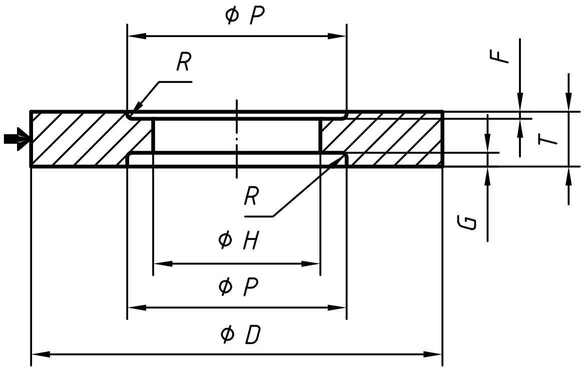


Figure 3 — Type 7

Table 3 — Dimensions of Type 7

D	*T*	*H*	*P*	*F*	*G*	R_{max}
300	40	76,2	150	6	6	3,2
	50			10	10	
300	40	127	190	6	6	5
	50			10	10	
350/356	40	127	215	10	10	5
	50					
400/406	40			10	10	
	50					
450/457	63			13	13	
	80					
450/457	50	203,2	280	10	10	8
	63			13	13	
	80					
500/508	40	203,2	400	10	10	
	50					
	63			13	13	
	80					
500/508	40	304,8	400	10	10	
	50					
	63			13	13	
	80					
600/610	50	203,2	400	10	10	
	63			13	13	
	80					
	100				25	
600/610	50	304,8		10	10	
	63			13	13	
	80					
	100				25	
750/762	80	304,8	400	13	13	
	100				25	
800/813	63	304,8	450	13	13	8
	80				13	
	100				25	
900/914	80	304,8	450	13	13	
	100				25	
1 060/1 067	63	304,8	455	13	13	
	80					
	100			25	25	
	125			30	30	
	150					
1 060/1 067	63	508	720	13	13	
	80					
	100			25	25	
	125			30	30	
	150					

3.4 Type 20: Wheel relieved on one side

See Figure 4 and Table 4.

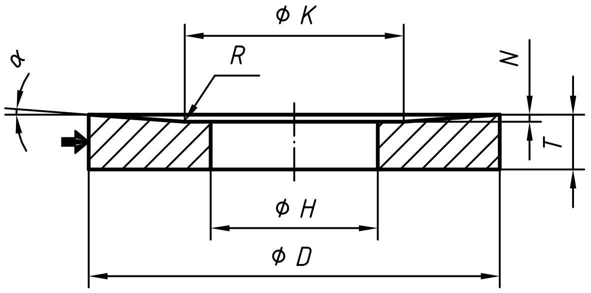


Figure 4 — Type 20

3.5 Type 21: Wheel relieved on both sides

See Figure 5 and Table 4

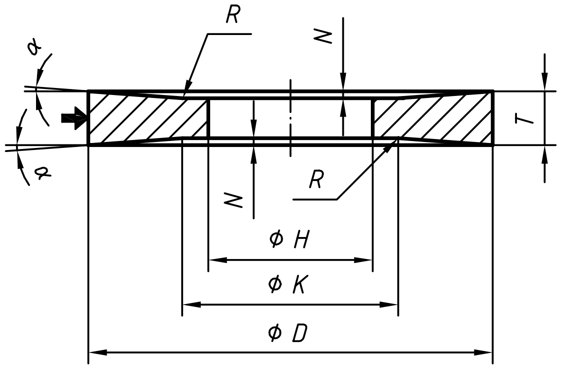


Figure 5 — Type 21

Table 4 — Dimensions of Type 20 and Type 21

D	*T*											*H*	*K*	*N*[a] *α* ≈		*R*$_{\max}$
	13	16	20	25	32	40	50	63	80	100	125			2°	4°	
250	X	X	X	X	X	X	—	—	—	—	—	76,2	150	2	4	3,2
												127	190	1	2	5
300	X	X	X	X	X	X	X	—	—	—	—	76,2	150	3	5	3,2
												127	190	2	4	5
300/356	—	—	X	X	X	X	X	X	—	—	—	127	215	2	5	
400/406	—	—	X	X	X	X	X	X	X	—	—			3	7	
450/457	—	—	X	X	X	X	X	X	X	—	—	127	215	4	8	
												203,2	280	3	6	
500/508	—	—	X	X	X	X	X	X	X	—	—	203,2	400	2	4	8
												304,8				
600/610	—	—	—	—	X	X	X	X	X	X	—	203,2		4	7	
												304,8				
750/762	—	—	—	—	X	X	X	X	X	X	X	304,8	400	6	13	

[a] The values *N* or 2*N* are taken less than or equal to half thickness *T*.

3.6 Type 22: Wheel relieved on one side and recessed on the other side

See Figure 6 and Table 5.

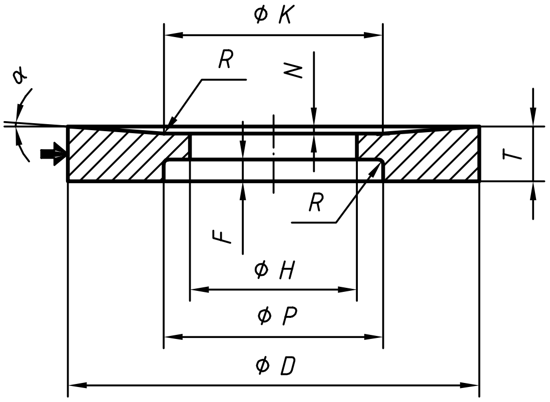


Figure 6 — Type 22

3.7 Type 23: Wheel relieved and recessed on one side

See Figure 7 and Table 5.

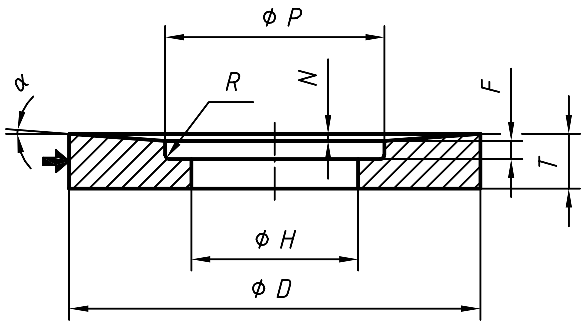


Figure 7 — Type 23

Table 5 — Dimensions of Type 22 and Type 23

D	T	H	$K = P$	F	N α ≈		R_{max}
					2°	4°	
300	40	76,2	150	13	3	5	3,2
	50				3	5	
300	40	127	190		2	4	5
	50				2	4	
350/356	40	127	215	13	2	5	
	50				2	5	
400/406	40			13	3	7	
	50				3	7	
450/457	63				4	8	
	80			25	4	8	
450/457	40	203,2	280	13	3	6	
	50				3	6	
	63				3	6	
	80			25	3	6	
500/508	40	203,2	400	13	2	4	8
	50				2	4	
	63				2	4	
	80			25	2	4	
500/508	40	304,8	400	13	2	4	
	50				2	4	
	63				2	4	
	80			25	2	4	
600/610	63	203,2	400	13	4	7	
	80			25	4	7	
	100			40	4	7	
600/610	63	304,8	400	13	4	7	
	80			25	4	7	
	100			40	4	7	
750/762	63	304,8	400	13	6	13	
	80			25	6	13	
	100			40	6	—	

3.8 Type 24: Wheel relieved and recessed on one side and recessed on the other side

See Figure 8 and Table 6.

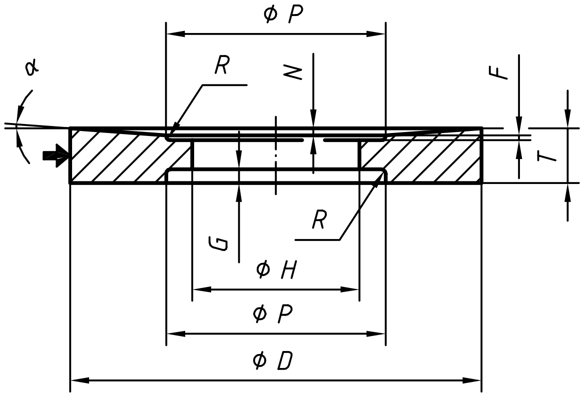


Figure 8 — Type 24

Table 6 — Dimensions of Type 24

D	T	H	P	F^a	G^a	N^a α ≈		R_{max}
						2°	4°	
300	40	76,2	150	6	6	2	4	3,2
	50			10	10	3	—	
300	40	127	190	6	6	2	4	5
	50			10	10	3	—	
350/356	40	127	215	6	6	2	5	
	50					2	5	
400/406	40					3	7	
	50					3	7	
450/457	63	127	215	10	13	4	8	
	80			13		4	8	
450/457	50	203,2	280	6	6	3	6	
	63				13	3	6	
	80			13		3	6	
500/508	40	203,2	400	6	6	2	4	8
	50					2	4	
	63			13	13	2	4	
	80					2	4	
500/508	40	304,8	400	6	6	2	4	
	50					2	4	
	63			13	13	2	4	
	80					2	4	
600/610	50	203,2	400	6	6	4	7	
	63			13	13	4	—	
	80					4	7	
	100				25	4	7	
600/610	50	304,8		6	6	4	7	
	63			13	13	4	—	
	80					4	7	
	100				25	4	7	
750/762	80	304,8		13	13	6	13	
	100				25	6	—	

[a] The values $N + F + G$ are taken less than or equal to half thickness T.

3.9 Type 25: Wheel relieved and recessed on one side and relieved on the other side

See Figure 9 and Table 7.

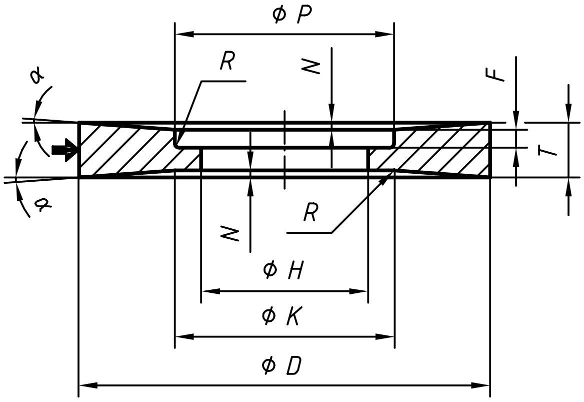


Figure 9 — Type 25

Table 7 — Dimensions of Type 25

D	T	H	$K = P$	F[a]	N[a] α ≈		R_{max}
					2°	4°	
300	40	76,2	150	13	3	—	3,2
	50				3	5	
300	40	127	190		2	—	5
	50				2	4	
350/356	40	127	215	13	2	—	
	50				2	5	
400/406	40	127	215	13	3	—	
	50				3	6	
450/457	63	127	215	13	4	8	
	80			25	4	7	
450/457	40	203,2	280	13	3	—	
	50				3	6	
	63				3	6	
	80			25	3	6	
500/508	40	203,2	400	13	2	—	8
	50				2	4	
	63				2	4	
	80			25	2	4	
500/508	40	304,8	400	13	2	—	
	50				2	4	
	63				2	4	
	80			25	2	4	
600/610	63	203,2	400	13	4	7	
	80			25	4	7	
	100			40	4	—	
600/610	63	304,8	400	13	4	7	
	80			25	4	7	
	100			40	4	—	
750/762	63	304,8	400	13	6	—	
	80			25	6	—	
	100			40	5	—	

[a] The values $2N + F$ are taken less than or equal to half thickness T.

3.10 Type 26: Wheel relieved and recessed on both sides

See Figure 10 and Table 8.

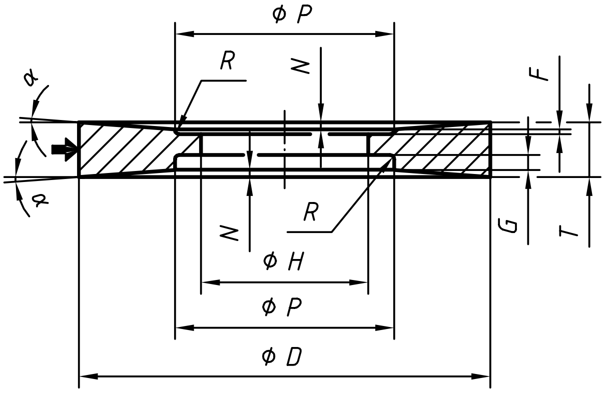


Figure 10 — Type 26

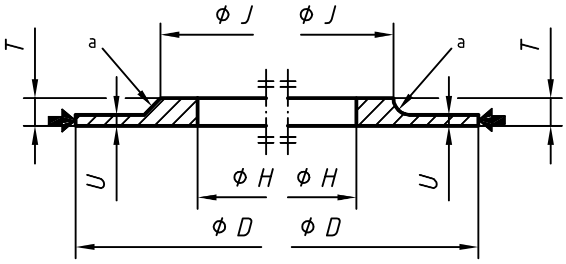
Table 8 — Dimensions of Type 26

D	T	H	P	F[a]	G[a]	N[a] α ≈ 2°	N[a] α ≈ 4°	R_{max}
300	40	76,2	150	6	6	2	4	3,2
	50			10	10	2	—	
300	40	127	190	6	6	2	4	5
	50			10	10	2	—	
350/356	40	127	215	6	6	2	—	
	50					2	5	
400/406	40	127	215	6	6	3	—	
	50					3	6	
450/457	63	127	215	6	6	4	8	
	80			13	13	4	7	
450/457	50	203,2	280	6	6	3	6	
	63				13	3	6	
	80			13		3	6	
500/508	40	203,2	400	6	6	2	4	8
	50					2	4	
	63			13	13	2	—	
	80					2	4	
500/508	40	304,8	400	6	6	2	4	
	50					2	4	
	63			13	13	2	—	
	80					2	4	
600/610	50	203,2	400	6	6	4	—	
	63			13	13	—	—	
	80					4	—	
	100				25	4	—	
600/610	50	304,8	400	6	6	4	—	
	63			13	13	—	—	
	80					4	—	
	100				25	4	—	
750/762	80	304,8	400	13	13	6	—	
	100				25	6	—	

[a] The values $2N + F + G$ are taken less than or equal to half thickness T.

3.11 Type 38: Hubbed wheel

See Figure 11 and Table 9.

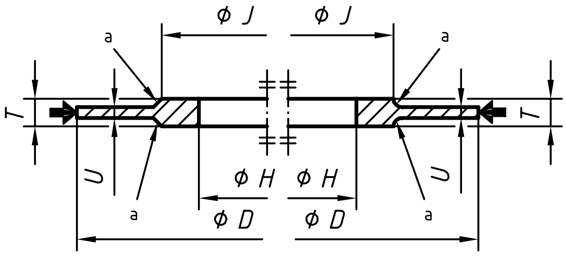


[a] Chamfer or radius left to the manufacturer's discretion.

Figure 11 — Type 38

3.12 Type 39: Double hubbed wheel

See Figure 12 and Table 9.



[a] Chamfer or radius left to the manufacturer's discretion.

Figure 12 — Type 39

Table 9 — Dimensions of Type 38 and Type 39

D	*J*	*T*	*U*								*H*
			3	5	8	13	20	25	32	40	
250	180	13	X	X	X	—	—	—	—	—	76,2
	190										127
250	180	20	—	—	—	X	—	—	—	—	76,2
	190										127
300	180	13	—	X	X	—	—	—	—	—	76,2
	220										127
300	180	20	—	—	—	X	—	—	—	—	76,2
	220										127
350/356	245	20	—	—	X	—	—	—	—	—	127
		25	—	—	—	X	X	—	—	—	
400/406	245	20	—	—	X	—	—	—	—	—	127
		25	—	—	—	X	—	—	—	—	
		32	—	—	—	—	X	—	—	—	
450/457	245	20	—	—	X	—	—	—	—	—	127
		25	—	—	—	X	—	—	—	—	
		32	—	—	—	—	X	X	—	—	
500/508	420	25	—	—	—	X	—	—	—	—	203,2
											304,8
500/508		32	—	—	—	—	X	X	—	—	203,2
											304,8
600/610	420	25	—	—	—	X	—	—	—	—	203,2
											304,8
600/610		32	—	—	—	—	X	—	—	—	203,2
											304,8
600/610		40	—	—	—	—	—	X	X	—	203,2
											304,8
750/762	420	32	—	—	—	X	X	—	—	—	304,8
		40	—	—	—	—	—	X	—	—	
		50	—	—	—	—	—	—	X	X	
900/914	550	32	—	—	—	X	X	—	—	—	304,8
		40	—	—	—	—	—	X	—	—	
		50	—	—	—	—	—	—	X	X	
1 060/1 067	550	32	—	—	—	X	X	—	—	—	304,8
		40	—	—	—	—	—	X	—	—	
		50	—	—	—	—	—	—	X	X	

4 Designation

A complete designation of a bonded abrasive product in accordance with this part of ISO 603 shall be consist of the following information:

a) designation of the bonded abrasives, e.g. "Grinding wheel";

b) reference of this part of ISO 603;

c) type (shape);

d) dimensions;

e) specifications of an internal nature;

f) the maximum operating speed.

In accordance with ISO 525 and this part of ISO 603

EXAMPLE

A grinding wheel for external cylindrical grinding between centres, Type 39, D = 450 mm, J = 245 mm, T = 32 mm, U = 20 mm, H = 127 mm, nature of abrasive A, grain size 80, grade K, structure 4, nature of bond V and a maximum operating speed of 50 m/s is designated as follows:

Grinding wheel ISO 603-1 - 39 - 450/245 × 32/20 × 127 - A 80 K4V - 50 m/s

5 Specifications

The specifications are left to the manufacture's discretion, see ISO 525.

5.1 Tolerances

Limit deviations and run-out tolerances in accordance with ISO 13942.

5.2 Balancing

Balancing is in accordance with ISO 6103.

5.3 Marking

Marking of bonded abrasive products is in accordance with ISO 525.

Bibliography

[1] ISO 8486-1, *Bonded abrasives — Determination and designation of grain size distribution — Part 1: Macrogrits F4 to F220*.

[2] ISO 8486-2, *Bonded abrasives — Determination and designation of grain size distribution — Part 2: Microgrits F230 to F1200*.

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